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GREAT PLAINS JOURNAL

PUBLISHED IN LAWTON, OKLAHOMA
BY THE
GREAT PLAINS HISTORICAL ASSOCIATION

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GREAT PLAINS HISTORICAL ASSOCIATION

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1961-66)

GREAT PLAINS JOURNAL

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Great Plains Journal is published semi-annually by the Great Plains Historical Association, whose headquarters are in the Museum of the Great Plains, Elmer Thomas Park, Lawton, Oklahoma. It is an interdisciplinary journal of opinion, and the views expressed in its articles are not necessarily those of the Association.

Correspondence concerning contributions, books for review, and all editorial matters should be addressed to the Editor, P.O. Box 1122, Lawton, Oklahoma. Single copies may be secured for $1.50.

CONSERVATION IN THE FUTURE OF THE GREAT PLAINS

Donald A. Williams, Administrator,
Soil Conservation Service,
U. S. Department of Agriculture.

In the vast wheat-and-cattle country that is the Great Plains, an important agricultural change is taking place. It is a change for the better, with the conservation of all soil and water resources as its ultimate.

It is problem country — always has been. It can be the driest, the wettest, the coldest — and, yes, the warmest — place in all creation almost. In the speed of its weather switches it more than holds its own with other areas of the nation.

The problems of living in the Plains were not so great until settlement got under way. With settlement came cultivation of the land. And with that came experience, trial and error, and, finally, the awareness of the limitations of this vast expanse of land with its tricky, almost unpredictable climate.

When the white man began moving into the Plains country, it was largely grassland. It supported herds of buffalo and antelope, which, in turn, supported the Plains Indians.

Since it was grassland, the Plains could grow cattle by the millions.

And, too, being grassland, it could produce wheat, which is grass. The Plains became the nation's breadbasket.

In the Plains are winds that seem never to stop blowing. Rain may fall just right for the growing crops, or it may come in a sudden downpour, a gully washer. Snow may fall gently and cover the entire area with moisture-yielding white, or it may come in blizzard form, piling up in one area while almost skipping another, causing hardship and suffering for farmer and city dweller alike.

In the growing season there is always the threat of hail, which can beat into the earth a stand of wheat nearly ready for the combines.

More ominous always is the threat of drought. Drought is nearly always somewhere in the Plains. And once in every generation there seems to occur a severe, long-drawn-out period with too little rain and snow.

Therefore the Great Plains is a different kind of country, with its own special problems, some of which have been intensified by some of the ways in which the land has been used.

In the days of homesteading, with settlers trekking westward after the Civil War years in search of new homes and new opportunity, a requirement to earn title to a piece of land was to cultivate some of it. This was without our present knowledge of Plains soils and their limitations for use. A man skilled in the ways of farming east of the Mississippi had no way of knowing that the climate played tricks and that some of the soils were no good for farming.

In those years, however, nature was on her best behavior. Rains came in almost unbelievable support of the claims of the land promoters. The new residents of the Plains sent back predictions of a rosy future. Their friends followed their lead.

The drought in the 1880's was a hint of the character of the Plains, and it discouraged a few. But the good years returned and the need during World War I for more and more food meant still more rapid expansion of Plains farming.

The drought of the 1930's was more convincing and that of the 1950's more convincing still. In the 30's the combination of high winds and exposed cropland brought national attention to the plight of the Plains.

The long and sometimes bitter experience in the use of Great Plains land in agriculture, along with a generation of the practice of soil and water conservation in the area, has pointed the way toward a more practical and less vulnerable agriculture in the Great Plains. Years of study by research teams have added to the growing fund of knowledge about how to deal with Plains soils in view of the weather hazards.

The result has been a blueprint of new opportunity in the Great Plains. The key is the use of agricultural land within its capability. The build-up of farming and ranching know-how over the years has made it possible for users of the land to know, first, how to care for and use their land for best results over the long pull and, second, how to repair the damage done in the years of less prudent farming and to protect this more hazardous land against future harm.

The conservation job in the Great Plains is a big one. The farmers and ranchers who call the Plains their home, however, have made an impressive start. Working through soil conservation districts, and using the help of trained technicians in the Soil Conservation Service, they have given millions of Great Plains acres the treatment needed to make these acres continuingly useful and productive.

Cost-sharing with federal funds has helped the Plains farmers and ranchers to go faster with their conservation work. A more recent tool fashioned by Congress for this part of the job has been the Great Plains Conservation Program in which the land user develops a complete conservation plan, decides on a schedule for carrying it out and receives federal cost-sharing for each permanent conservation step that he completes. There is no temporary palliative here.

The objective of this kind of an approach is a sounder agriculture in the Plains, a farm or ranch unit less sensitive to the tricks of nature and more dependable in output, in bad years as well as the good.

Evidence has been mounting year by year as to the practicability of this type of program to fit the Plains with a shield against drought. For example, stubble mulch tillage is proving a method with triple value in the conservation use and treatment of Great Plains croplands. Its first value is that of protecting the land against erosion damage. Second, it is a valued agent in the conservation of moisture and can make the difference between a harvestable crop and a failure. And, third, its effectiveness in improving the structure of the soil, making it more efficient as well as more resistant to the forces of erosion, is now unquestioned. This practice is a recognized part of good operations. No Great Plains cost-sharing is provided for it.

Water, for livestock and for irrigation, is another need in the Plains. Failure of water supplies in dry years means hardship in agriculture, with similar effect throughout the Plains' economy. Development of new and existing water supplies is an objective of the Great Plains Conservation Program along with the conservation of water in all its uses. These are long-range, water-banking steps.

Years of experience with trees have paid off in reliable know-how in species and methods for windbreaks. Successful tree plantings are dotting the whole area of the Plains now, giving protection to land, to animals, both wild and domestic, and to people.

In the conservation of grasslands, range technicians can gauge with reasonable accuracy the capacity of any given area to support grazing animals. They can skillfully advise the rancher on the use of his grazing resources to promote improvement and to keep them in shape to resist the damaging effects of drought when it comes.

In the conservation treatment of damaged cropland and range, the techniques have been proved by years of experience. Where special drills for seed were needed, they were developed. Planting methods have been improved. Equipment and techniques for ridding the range of competitive shrubs have been tried and proved.

How vast is our conservation job in the Plains?

The recent inventory by the Soil Conservation Service and its sister agencies of the conservation needs of the Plains states, as well as other areas of the nation, revealed interesting facts.

Of 182,251,000 acres of cropland in the 10 states, 111,-283,000 acres are in need of conservation treatment.

Out of 120,716,000 acres of cropland on which erosion is a dominant problem, 82,706,000 acres need treatment. Excess water is the principal problem on 9,455,000 acres, and 6,004,000 of this is land requiring conservation treatment.

A total of 239,674,000 acres of pasture and range need treatment out of 333,525,900 acres in this land use. Treatment for these lands ranges from the practice of conservation use to the more intensive practices which may include the control of moisture-stealing brush and other vegetation as well as the seeding of more productive drought-resistant grasses.

In the Great Plains states are 3,917 watersheds, with 2,155 of them offering an opportunity for investment in flood protection and watershed development. These watersheds total in area 326,-645,115 acres.

There are 13,966,000 acres in these projects offering benefit from work on floodwater and sediment reduction.

These acres are on 165,133 farms.

A total of 5,913,500 acres, on 58,169 farms, would benefit from the reduction of erosion damage in the carrying out of these watershed projects.

Water level management is needed on 4,146,000 acres on 30,589 farms in the watersheds. Irrigation improvement is urgently

needed, as a means of conserving water supplies, on 3,706,000 acres.

Recreation development, frequently a product of watershed development, is a potential on 343,159 acres.

Classification of our soil resources is an essential first step in solving our soil problems in the Great Plains or any other area.

In the first three land classes — those which need only slight to moderate conservation treatment — there are 229,000,000 acres in the Great Plains states.

The 61,912,000 acres of Class IV land represents somewhat more of a problem. This is the kind of land that, for continuing use, must be used with more than ordinary care. Used unwisely, especially in cultivation, it is subject to great damage. In this category are 21,668,900 acres of cropland, 35,423,700 acres of pasture and 3,963,000 acres of woodland.

One of the big problems in the soil conservation program in the Great Plains, but one on which encouraging progress is being made, concerns the 12,000,000 or more acres of low-grade cropland which need to go back into permanent grass. Under cultivation these lands can undergo great damage. Much damage already has been done through wind and water erosion. Experience shows, moreover, that the use of these areas as cropland can't pay over a period of years. Eventually the man who cultivates this land, although in better moisture years he may get good yields, will reap less than a profit for his time and labor. At the same time, the condition of the land, its productive capacity and its ability to resist erosion, is bound to deteriorate.

One of the most important changes that can be sensed in Great Plains farming and ranching is in the attitude of users of the land toward the practice of conservation. This attitude is based on a new understanding of the problems peculiar to the Plains and on the realization that, for those who live in the Plains to prosper, the land must have the care and treatment that we know it needs.

This may not be a job for a single generation. But it can be accomplished, to the lasting benefit of every citizen of every generation in our nation, within a reasonable number of years. We know the approximate size of the job. We have the know-how and the skills we need to see it through. We have the medium through which to work efficiently and effectively in the soil conservation districts which cover virtually the entire Plains area. We need only to keep to the task, driving ahead as rapidly as we can, to reach our goal.

SOME ARCHEOLOGICAL PROBLEMS IN THE GREAT PLAINS

Waldo R. Wedel, Curator of Archeology,
United States National Museum,
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Not many years ago, scholarly opinion held that the Great Plains were an area without significant human history before the coming of the White man in the 16th century. In large part, what was written about the region was by Americans or Europeans with a temperate-climate, humid-lands background. The general reaction to the steppe and prairie grasslands of the American West were epitomized in their designation as the Great American Desert, first laid down on Stephen H. Long's map of 1823 and thereafter part of the stock in trade of cartographers and geographers until Civil War days. Such thought as was given to the aboriginal inhabitants was reflected in Lewis H. Morgan's dictum in 1859 that

> "The prairie is not congenial to the Indian, and is only made tolerable to him by the possession of the horse and the rifle . . . East of the great range of the Rocky Mountains from Mexico to Peace River, we have the prairie in the interior of the continent, a country incapable of occupation to any considerable extent without the horse . . ."

This view has strongly colored the thinking of most anthropologists for nearly a hundred years. Typical, perhaps, was Kroeber's assertation in 1928 that "the largely negative results of archeology indicates the Plains as only sparsely or intermittently inhabited for a long time." Yet in 1914 Wissler had cogently observed that the "non-agricultural dog-using rovers after buffalo" met by Coronado in the southern Plains may have represented the "outlying fringe of the older (pre-horse) Plains culture;" and still earlier, the same observer had suggested that "our knowledge of the archeology of the area is so vague that an assumption of any sort seems scarcely justifiable." On the other hand, as recently as 1940, Mishkin stated that to "many students of the Plains area" its occupation by non-horse hunters was "incredible;" and in 1948, Kroeber insisted that "the tepee or conical skin tent dragged on poles; the ordered circle of tepees; the bedding, clothing, and even receptacles of skins and rawhides" so characteristic of the historic Plains tribes "had no counterpart in the region even as late as 1600" among its earlier residents.

In the last three decades, the spade of the archeologist has been wielded with increasing diligence throughout the Plains from the Rio Grande to the Saskatchewan. The results, coupled with the sporadic but by no means unimportant older investigations, have abundantly shown that man has occupied the region throughout a time span to be measured in terms of millennia; that lifeways centered about the bison but without the horse were not only possible here, but were persistenly practiced by many peoples; and that the semisedentary maize-based village life of the Eastern Plains, though far younger in the region than bison-hunting lifeways, nevertheless already had an antiquity of at least some hundreds of years when it was first seen by White men. Thus, although the Plains were probably the last major geographic region in the United States to attract sustained archeological investigation, such is the wealth and variety of material already available on its prehistory that we must regard as singularly uninformed and astonishingly naive the recent comment of a document-bound librarian who asserted that "we are prevented by the absence of data from conceiving of the Indian apart from the white man's influence."

Archeology has by no means solved the problems of the age and origin of the Plains Indian and his culture. It has shown rather that the problem is much more complicated than anyone suspected. As in every other region once archeological survey and excavation were seriously and intelligently applied, so here the problems of cultural origins and development have multiplied as our perspectives changed and deepened. Our problems are legion; and within the limits of space here available, it will be possible only to touch briefly on what seem to me to be some of the more promising and significant points to attack.

It is assumed here that the primary aim of Plains archeology is "to make the past live again" – to preserve for posterity the story of the rise and spread of early cultures in the region, to define the nature of their adjustments to the natural environment, to determine their interrelationships with one another and with the later White invaders. It is assumed also that the basic needs once outlined by Carl Guthe for American archeology can be accepted as applicable here: trained field and laboratory personnel, adequate supervision and equipment, knowledge of proper field methods and their application, proper maintenance of records and accumulated materials, and adequate financing of such work as is undertaken and of the publications that follow. We are not concerned here with needs, which are many and real, but with problems.

These problems can be approached in various ways. I

shall consider them under three categories, which are admittedly not always mutually exclusive. Thus, one set of problems may be thought of as involving the gathering of our basic data; another, as concerned with analysis and reporting; a third, with interpretation and synthesis. Because archeology, like other fields of scientific inquiry, proceeds by a process of analysis, synthesis, re-analysis, and re-synthesis, always taking cognizance of new data, all of these problems interlock.

Gathering the Basic Data

Despite the extensive collection of artifacts, site and excavation records, maps, and other supporting data for Plains archeology which are to be found in many of the museums and anthropological laboratories in the region and elsewhere, we must never assume that we already have enough material to fulfill our objectives. We cannot hope to excavate completely every site on record or the countless additional ones that will yet come to light; but who is to say, without a check, which site is unimportant and dispensable? In final analysis, all of our interpretations and reconstructions must rest on the data from the field; to the extent that our data are incomplete and one-sided, our conclusions drawn from them are likely to be out of balance.

Since World War II and the inauguration of large scale water control, highway construction, and other major nation-wide programs, an increasingly large portion of the archeological work has consisted of salvage operations – in reservoir areas, on roadways, in industrial areas, etc. This is important and must be continued; for wherever large scale modification of the landscape goes forward, irretrievable losses to the record of prehistory must result. The impact of salvage archeology on the interests and activities of professionals can be gauged in part by the extent to which papers stemming from such operations figure in regional and national archeological conferences and in publications. Since much of this work is subsidized wholly or in part, and thus brings much needed financial support for our studies, we must be grateful for the help thus provided which might not otherwise be forthcoming.

That salvage archeology will get us all of the basic data we need is unlikely. It has already produced a wide sampling of localities that otherwise might not have attracted professional attention for years to come; and so long as major losses to the record are in prospect, we shall have to bow to the inevitable and extract in the time left to us what information we can from the materials faced with destruction. On the other hand, there are still vast tracts of land and many hundreds of miles of stream valleys in which

no reservoirs, highways, motels, or factories are immediately in prospect, and in which there may well be sites of fundamental importance for our studies. These will involve not only village sites and cemeteries of the last thousand years, but also preceramic campsites and game kills dating from periods about which we still know relatively little – far less, at any rate, than we do about the later village complexes of the ceramic period.

It is my conviction that there will always be a great need for more well documented, fully catalogued, and systematically organized collections, maintained for ready accessibility to visiting scholars; and that these collections must include non-salvage as well as salvage materials. Such collections, no matter where housed or how collected, are the basic stuff of human prehistory; and every museum which has or can acquire such materials, should strive to make its local or state coverage as complete as possible.

It should not be necessary to add that the full documentation of such collections must include all possible relevant data. This should include any information bearing on their occurrence with reference to soil horizons, terrace deposits, and any other associations that may help to place them chronologically, culturally, and in any other possible relations. Far too many of our museum collections are inadequately documented; and there is no reason to go on accumulating materials whose provenience is known only by state or county, if additional details are in any way obtainable.

The Great Plains include an area of some 800,000 square miles or more; and the need for further systematic archeological surveys in many sections is still imperative. It is doubtful that there are more than two score practicing professionals in this vast region, and probably less than half of those are primarily research men. In this light, it seems self-evident that cooperation between professionals and intelligent problem-conscious "amateurs" or non-professionals will be required if we are to maintain problem-directed researchers on a scale commensurate with the rate at which our basic materials are disappearing.

Analysis and Reporting

In some respects, as a growing number of workers has become aware, some of our gravest problems lie in analysis and reporting – in what is done with our basic data once the field work ends. Although archeologists in the Plains participated to a lesser extent than those in some other sections of the country in the work relief operations of the 1930s, there still exist in a number of institutions sizeable backlogs of unreported and partially reported collections from WPA, CWA, and other major programs. Some of

these stem from the earliest large scale projects ever carried out on the Plains, and they have for years constituted a very important part of the basic data on which current thinking is based. It is hardly to be expected that all of this will be published in full, or that all of the considerable bodies of data assembled before relief archeology began, can be published in full. There are, however, key bodies of data of sufficient proportions to be statistically valid and these richly merit publication.

The basic problem here, of course, is how to make generally available these great backlogs of unpublished material, particularly in the face of other growing demands on the time of the professional personnel in whose custody these materials remain. What are we to do, in the face of constantly rising publication costs, with the ever-growing arrearage of field reports, theses and dissertations, and other manuscript materials containing information urgently needed by other workers in the region?

I do not know the solution; but microfilm, microcards, and other duplication processes offer one way out. Alternatively, perhaps it is time for workers to face up to the fact that not every report they write will inevitably attain the dignity of the printed page. For better or for worse, future researchers dealing with specific problems will perhaps have to arrange to visit those institutions in their area of interest that have pertinent unpublished collections and to draw therefrom such information as is relevant to their special problems. A substantial proportion of the existing collections, both artifact and non-artifact, will in short, come to be viewed in the same light as archival materials which the writing scholar must make a special effort to visit and study instead of relying upon his colleagues to write up and publish everything they have found or collected.

Even while we recognize that our data are not science until they are published, it seems to me fatuous to insist that no more field work should be undertaken in some sectors until the existing backlogs of material have been thoroughly reported. New data will inevitably affect the interpretations of the old, and so we should never dispense with the chance to get newer and possibly better grist for our mill.

Interpretation and Synthesis

Whether we have access to published papers or must content ourselves with printed summaries and with archival and museum research on unpublished materials, our data must of course be digested, evaluated, interpreted, and synthesized. Beyond the site monograph or field report, we must put our data

in shape for wider usefulness, often combining the strictly archeological with relevant data from other disciplines in order to illuminate problems which are specifically oriented toward some larger research goal. Here we come to grips with some of the real problems in Plains archeology.

Cultural classification and terminology: That the systematics of Plains archeology need refinement and clarification has become increasingly evident in recent years as the newer and more abundant data come to hand. During the 1930s, when controlled data were scanty and came from widely separated sites or cultural complexes, classification was admittedly done on a partly intuitive basis – by fiat, so to speak, rather than through painstaking statistical analysis and comparative methods. Today, when museums and laboratories often bulge with collections accompanied by sound provenience data, the time would seem ripe for further and more penetrating analytical procedures. First of all, we need full and up to date trait lists for practically all of the cultural units whose names are currently in use: and the extensive unpublished collections should make such trait lists possible now, where they were not feasible two or three decades ago. Detailed comparisons of such lists, involving careful statistical manipulations rather than a mere re-shuffling of terms or arbitrary categories by intuition, is a problem of first importance to Plains archeology. Only by such procedures can we be sure where changes in classification should be made and the direction which those changes ought to take.

Chronology: Regional, cultural and chronological sequences have been promulgated for most sections of the Great Plains, but until comparatively recent years, the crucially important time element has not been adequately controlled. With the advent of radiocarbon dating and renewed interest in dendrochronological possibilities, it should soon become practicable to assign more precise datings to the various cultural complexes that are being defined for the Plains region. An important step in the right direction is represented by the Missouri Basin Chronology Program; but so long as the costs to be paid from limited funds keep the number of dates per site or complex down to one or two or three, nagging doubts as to their reliability in reconstructing cultural history will still remain with us.

Intra-areal relationships: It has been apparent from the outset that the native cultures of the Plains did not develop in isolation or independently of those in adjacent regions, such as the Eastern Woodlands, the Southwest, the Great Basin, and the Plateau. Early discussions of the Plains area, including Wissler's re-

view of the material culture of the historic tribes and Holmes' characterization of the antiquities, stressed the strong influences from various directions at the margins of our area. Today, as larger masses of controlled archeological data come to hand, and as professional curiosity leads into the marginal sectors or contact zones between the Plains and neighboring regions, the extent and importance of these wider relationships becomes increasingly evident. Because of the relatively advanced status of culture chronology in the Southwest and the fact that many of the potterywares in that region are datable to fairly close figures, the problem of Plains-Southwestern relationships is a particularly important one, at least for the Central and Southern Plains. Here such problems as the Apache, the time of their arrival, and the role they played in transmission of cultural influences between the two areas and from their earlier homeland in the far north, are matters of great interest. On an earlier time level, we have the problem of the Woodland-like materials in north central New Mexico and their connection, if any, with Plains materials. There is also the question of certain late prehistoric bone tools (for example, the beamer) and associated unpueblo-like pottery (Potsuwii Incised) and their relationships to Plains materials. Other interesting items could be pointed out, but these are suggestive.

On the western margin of the Plains, the early relationships with the Great Basin by way of the Wyoming Basin and with the Plateau by way of the upper Missouri still invite study. On the northeastern periphery, there is the perennially vexing question of the Dakota-Manitoba mound complexes, and their relationships with Minnesota and Iowa materials, and with named tribal entities. And, further south, the whole matter of interplay through hundreds or thousands of years of time between Eastern Woodland cultures and those of the Plains, from Archaic through Woodland to Middle and Late Mississippi times, still awaits analysis and interpretation.

High Plains prehistory: Most of our time and funds to date have been devoted to the problems of the Village Indians in the eastern Plains, where fixed communities with relatively rich middens and readily definable house remains have attracted the interest of professionals for more than half a century. By contrast, except for an occasional Early Man site and a few later ones pertaining to the hunters and gatherers – or Foragers, if you will – of Wyoming and Montana, we have rather neglected the prehistory of the short-grass belt fronting on the Rockies from Alberta to the Llano Estacado. We have assumed too readily that the broad dry upland expanses between through-flowing streams, the extreme climatic conditions, and the lack of wood for fuel, tipi poles, and

stakes, because they prevented year-round residence would therefore also have made regular seasonal occupation difficult or impossible. We have paid too little attention, I suspect, to the nature and distribution of the surface water resources that were available in prehistoric times and which were of paramount importance to the bison and to the men whose subsistence was centered upon them. That bison-hunting as a way of life was already thousands of years old when Coronado first met the Querechos in the Southern Plains is incontestable; and so, I think, is the view that these hunter folk were in and through the short-grass region many many times in the remote past. What we need now is more healthy skepticism about the unsuitability of the High Plains for primitive human occupancy, and a thoroughgoing search for particulars as to how and where man was making out in the region between say 6,000 and 2,000 years ago. The digging will not be overwhelmingly rich or easy, but the problem will be an interesting one to whittle at.

Aboriginal human ecology: As one observer has aptly noted "The Plains and the western Prairies offer an environment which inevitably lays its stamp on the culture of any group occupying the area." In seeking to sharpen our insights into the ways in which various human groups, coming into the region from other areas and different environments, have adapted themselves to the grassland setting, archeologists will need the continuing cooperation of students trained in other disciplines than archeology. The geologist and geographer will need to help us with stream terrace studies and on other details of the land surface and its changing form through time. The soils specialist must be called upon to interpret the record of the buried humus soils and to define the nature of the ancient land surfaces and the contemporary climates thus represented. The archeologist must carry on further studies of native settlement patterns, taking his initial cues from correlations of late sites with historic native settlements and then critically evaluating the many and varied changes seen in the archeological record through time. It is abundantly clear that man has disposed himself over the Plains landscape in many different ways during the ten thousand years or more of his sojourn here; but so far only broad and preliminary reviews of the situation have been attempted. We need careful surveys of the plant and animal resources in all parts of the region; of their relative abundance at various times and places in terms of human dietary needs on the part of both hunters and agriculturists; and of the manner in which early peoples and late adapted themselves to the regional variations in resources, to the periodic droughts that characterize the

regional climate, and to new ideas and practices (such as corn-growing) which came in from neighboring areas.

It has long seemed evident to me that archeologists were overlooking some likely leads to worthwhile ecologic insights in not instituting and carrying through some extended cooperative and/or interdisciplinary studies in selected districts of the Plains. For example, the Republican River traverses the Central Plains from the Colorado Piedmont eastward to the well-watered tall grass prairies. Already we know that its human history spans at least 10,000 years of time. It has had much attention from paleontologists, archeologists, grassland specialists, pedologists, historians, and others. A carefully coordinated study, integrating relevant data from these and perhaps other lines of scientific inquiry, should provide an extremely interesting view of the area as the home of man – a sort of synopsis or master cross section of most of the span of man's residence in the region.

Ecological problems of another sort invite attention in and around detached hilly or mountainous districts such as the Black Hills, the Wichita Mountains, and probably elsewhere. These would have provided in small geographic compass a variety of environments, good wintering places for man and beast, and a succession of ripening seasons for plant foods – all the advantages of mountain, valley, and plains environments within the range of movement of foot or mounted hunters. It seems evident already that the Black Hills will eventually be found to have remains of frequent and recurrent, if not continuous, occupancy throughout some thousands of years of time.

On a broader scale, I suggest that when a thoroughgoing survey is made of the widely scattered springs and water holes, temporary and otherwise, that besprinkle much of the High Plains west of the 100th meridian, we may find appreciably more evidence of human occupation here than we now know about. The evidence will not be superabundant, for men who live by the hunt and travel about on foot must forego the luxury of nonessentials. I believe, though, that wherever surface water was available for bison in the short grass country, there we must consider the likelihood that man also went in pursuit of the herds, even if he had to go on foot with only dogs to drag his baggage. The marginal tracts fronting the Rockies in the west and along the eastern border of the shortgrass country may be expected to show a greater abundance of remains, for here in the shelter of broken, hilly, or mountainous terrain, with more plentiful supplies of wood, water, game, and shelter, men could have survived at times when the storm-

swept or drought-ridden uplands were unsuited to occupancy by man or beast.

Trait distribution studies: From the trait lists that have been compiled from time to time by archeologists in course of their descriptive studies, it has become apparent that many of the material culture traits with which we deal have significant distributions in time and space. With the increasing quantities of such data that are now at hand, it should be possible to re-examine the distributions more critically in a search for their possible origins, the time and manner of their first appearance in the Plains, and their significance in terms of new habits or new ways of performing old ones. For example, the adz-shaped elkhorn scraper handle, the serrate metapodial flesher, and the cancellous bone paint applicator have, in general, a late time distribution and seem to appear earliest in the northern Plains. These are well-known artifacts among historic tribes of the region; perhaps if their distributions were carefully mapped out, with the archeological data utilized to give time depth to the historic and ethnographic data, we would get some new insights into their history and meaning in Plains culture. Again, the bison frontal scoop with horn core handle seems at present to have a curious split distribution – it occurs in northeastern Nebraska and on the Middle Missouri, is apparently absent from the Central Plains of Nebraska and Kansas, and re-appears in considerable numbers in the late prehistoric cultures of Oklahoma and northern Texas. The metapodial digging stick tip, with perforation for hafting, shows a somewhat similar distribution, but with suggestions of a possibly much earlier occurrence in certain Woodland cultures of Nebraska. The toggle harpoon heads found along the Missouri from Plattsmouth, Nebraska, to the Cheyenne River or beyond, and the unilaterally barbed harpoon or spear heads with a still undefined spread in the northern Plains, are still other elements that invite closer study. More is involved here than merely the compilation of distributions for convenience of other workers in making their comparative studies, for at least some of these items imply the arrival of new techniques or mechanical procedures, and perhaps important shifts in cultural values on the part of the receiving groups.

A detailed comparative analysis of native house types of the Plains, especially of the eastern Village Indian peoples, is long overdue. Since Linton's pioneer attempt in 1924 to trace the origin and diffusion of the earthlodge into the Plains, archeology has provided a great deal of new information on the antiquity of this structure and of its great variability through time, and has shown particularly that its history and development are more complex

than was supposed before archeological data were available. It has been asserted that Plains archeologists spend far too much time and energy in their efforts to determine whether the Indians lived in round or in square holes in the ground; but if, as now seems certain, these efforts shed further light on the evolution of house types and thus on the development of Plains culture, I think they are amply justified. Apart from their comparative usefulness within the region itself, the data on older house types would undoubtedly give us additional insights into the wider relationships of the earlier peoples who moved into the region from its borders.

There is also the intriguing matter of fortified town sites throughout the Plains. On the Middle Missouri, for example, there is evidence of carefully laid out communities with bastioned defensive works in an early pre-White period, of an intervening period of large diffuse unfortified settlements, and of a later period on the White contact level when small compact villages were surrounded with oval or circular stockades. Many variations in detail of pattern are suggested; their significance, and the exact relationship of the older bastioned rectangular communities to such eastern Middle Mississippi sites as Aztalan, provoke continuing curiosity. Anything like a definitive study is probably not feasible at the moment, and much of the information needed has already been lost, or soon will be, in reservoir construction; but the materials for a preliminary statement and a definition of problem are surely at hand.

Physical anthropology: Studies on the physical anthropology of the Plains peoples have been neglected much too long, despite the existence of considerable numbers of historic and prehistoric crania and other materials; and there is not a single published monograph detailing the results of analyses of any statistically significant and culturally identifiable series of skeletons from any part of the region. There are strong hints that the cultural changes noted by archeologists in the prehistoric remains may have been linked with the arrival of new peoples who differed in physical appearance from their predecessors; that certain groups, such as the Mandan, differed measurably from other contemporary groups, such as the Pawnee and Arikara; and that head form and head height vary significantly from time to time and from place to place. We badly need comprehensive studies on the existing collections, on new ones as they accumulate and on morphological studies of living Indian remnants, all carried out and interpreted against the increasingly detailed cultural background that is being developed through archeological field work.

Ethnohistory and archeology: The later archeological remains in many parts of the Plains demonstrably relate to known peoples who were in direct or indirect contact with White men; and thus it is often possible to check closely some portions of the archeological record against historical and ethnographical data. In return for the help thus derived from documentary sources, the archeologist can sometimes correct naive interpretations on the part of ethnographers where they have too readily accepted the statements of 20th century reservation Indians as the final word on matters which archeology and history can show are open to other and likelier interpretations. The importance to archeological interpretation of accurate surveys of archival and other early historic materials is not yet sufficiently appreciated.

Today we are sure that the Plains Village Indian way of life was already well established half a millennium before Columbus' landfall in the New World; and there is a very considerable body of data bearing on the life and culture of these peoples in the still dimly seen period before 1800. Analytical studies of such materials for the Pawnee, Wichita, Arikara, Mandan, Cheyenne, and other tribes for whom the data now exist in quantity, or soon will, should make it possible to assemble much more complete and accurate tribal monographs based on archeology, history, ethnography, physical anthropology, and other lines of evidence. Such integrated studies should give us far better insights than we now have on the background and historical development of the Plains Indian peoples.

The whole problem of trade contacts during several centuries of time between the natives of the Plains and the Euro-American invaders also invites further examination and interpretation. We know, of course, that native crafts and industries deteriorated rapidly once the White man's metal goods, glass ornaments, machine-made cloth, and other items became readily available to the Indians. Village Indian sites from the Dakotas to Oklahoma and the Texas plains have yielded quantities of these trade materials. A thoroughgoing study of the Indian trade, based where possible on critical use of all available documents, utilizing careful technological observations on the metal, glass, and textile materials traded, supplemented with the findings of archeology, and with all these data integrated in a chronological framework, would be of very great interest to professionals and non-professionals alike.

Bibliography on Plains archeology: As the tempo of field work and publication in Plains archeology is stepped up, all work-

ers here and beyond its border must feel a growing need for a comprehensive and up to date bibliography to the literature bearing on the region. Most investigators have probably been developing their own working bibliographies as their studies expand and intensify; but this results in a duplication of effort and industry that could be better and more effectively spent in other directions. A concerted effort to which all workers would contribute by pooling their resources, coupled with competent direction and production, and with adequate support toward publication, would produce an extremely useful research tool and an important contribution to Plains archeology.

Such a bibliography should, of course, be far more than a mere listing of the already published "Literature Cited" or "Bibliography" sections found in any good paper or monograph, whose assembling is essentially a routine clerical job. It should include an accurate and full listing of all known papers bearing on the archeology and prehistory of the region, not omitting the many brief papers which appeared decades ago and which, despite their sometimes unscholarly character, nevertheless often contain leads that no modern researcher with claims to scholarly standards can afford to ignore. It should also include carefully selected items on the ethnography, history, geography, ethnozoology, ethnobotany, physical anthropology, ecology, and other related fields whenever these writings will help us to understand the environmental background and cultural history of the region. Consideration should also be given to inclusion of pertinent unpublished manuscript materials and keys to their whereabouts, to microcard and microfilm files, etc.

Whatever its coverage, such a bibliography should include not only a full listing of papers, preferably annotated, but also an index or finding list in sufficient detail to achieve maximum usefulness as a reference work. Good models exist in such works as Brew's *A Selected Bibliography of American Indian Archeology east of The Rocky Mountains;* in *Bibliography of Ohio Archeology,* and in more comprehensive form, in the U. S. Geological Survey's "Geologic Literature on North America" and the Geological Society of America's "Bibliography and Index of Geology exclusive of North America."

Our brief and inadequate survey of some of the major problems in Plains archeology will have to end here. Many many more could be listed. What seems particularly important to me now is that Plains archeology has reached the point where it is, or should be, becoming increasingly problem-conscious; and that

those problems, to the extent that they are pursued beyond the mere reporting of sherds, bones, and sites, must increasingly recognize and draw upon the relevant data of other disciplines to achieve the maximum of interpretation. We have a great and ever-growing store of basic data from many parts of the region, and these data hold much promise of illuminating many facets of man's long residence in the Plains. I am confident that when these data and those yet to come have been analyzed and reported, and then interpreted imaginatively yet circumspectly, they cannot fail to enrich greatly our insights into man's past in the Great Plains.

STIMULATING OUR GREAT PLAINS HERITAGE

Michael Kennedy, Director,
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According to an authority, Dr. Carl F. Kraenzel, Professor of Rural Sociology at Montana State College, a foundation for the Great Plains region has long been proposed. It is no closer to fruition today than it was a quarter century ago. As early as 1939-40, a strong effort to prepare a proposal for presentation to the Rockefeller Foundation was sponsored by a group from Montana. The result was a study by the Rockefeller Foundation at a conference in New York City in 1942, followed by a second conference held at Lincoln, Nebraska, later that same year. Unfortunately, mostly non-Great Plains residents attended, and there was a strong conviction that the region was "barren of institutions, leadership, and talent." Perhaps an outsider would see it *that* way!

Fortunately, the Rockefeller Foundation later probed deeper and found both enthusiasm and "talent". The result was the publication of an adult discussion guide dealing with many special problems – particularly social and cultural – of the Plains. A grant was then made by the Rockefeller Foundation to carry on an adult education program in North and South Dakota and Nebraska. A separate grant, to the Greater University of Montana, brought forth the vital "Montana Study" under the skilled leadership of Baker Brownell, aided by the late, great Joseph Kinsey Howard. The broad cultural program aroused nation-wide interest, and some of the results were described by Howard Richard Poston (in his book dealing with small town renaissance) and by Baker Brownell (in a book dealing with the human community). In short, one idea, at least, that had germinated in the Great Plains, came to practical reality there, and later found its way into the mainstream of our national life.

In October, 1956, the last great conference, to date, was held at the University of Oklahoma under a symposium: *Cultural Leadership in the Great Plains,* sponsored again by the willing Rockefeller Foundation. Several hundred people from this region participated. All of them found the symposium challenging, vast–

and, for the most part, frustrating – (as did the writer, who represented the Montana Museum).

But this same idea has since languished in the Great Plains region itself mostly by the conduct and inaction that often afflicts those who live in isolation. It has languished largely because of "outsiders" who, failing to understand the problems of the region, strike wildly about with prejudice and distortion. Yet since the 1956 symposium at Norman, the idea has grown, at least in the minds and hopes of many people, particularly those of us in the museum field.

Events indicate that after some 20 years the idea of a Great Plains Foundation is still with us, and still unresolved. Let us hope that the idea will grow on firm ground; and that the residents of the Plains do not again strangle it; rather that in the 1960s they will put their devoted efforts to the task and succeed. It will require prodigious effort!

The vast Great Plains, from the 98th meridian, west to the foothills of the Rockies, and from Canada down to Mexico, constitutes one-fifth of the United States. The region includes portions of ten states; yet has only a total population of less than seven million. Specifically, it includes the western half of North and South Dakota, Nebraska, Kansas, Oklahoma and Texas, and the eastern half of Montana, along with large parts of eastern Wyoming, Colorado, and New Mexico. This region is clearly distinguished from all other U. S. areas by such natural phenomena as climate, soil characteristics, native plant types, and native animal classes. Its history is unique. Its culture diffused, different and generally untapped as yet. The semi-aridity of the region (measured by 20 inches or less of precipitation over a long-term period) is characterized by unpredictable variations. A series of years with abundant rainfall is usually followed by a series of years with very low rainfall; or in some years there may be abundant precipitation which, however, appears at unfortunate seasons or in unfortunate form. But above all, there appears to be nothing predictable about these variations, as there was nothing predictable about our Great Plains history or culture.

The region would be a desert, as Walter Prescott Webb sees it, were it not for the continental climate, a climate where limited rainfall occurs frequently at the most favorable season. A slight shift of the usual precipitation away from this optimum may result in as much hardship and suffering as a decrease in precipitation. In an arid region, man adapts to the facts of the physical environment or else he perishes. In a humid area, man may choose

among several patterns or alternate ways of living, with great chances of success; but in a semi-arid land like the Great Plains, he is often misled. He frequently fails to evaluate this physical environment, and he suffers because he does not plan for the lean years. This is especially true if he comes from a humid area and brings with him his native humid-area institutions. This is one of the great hallmarks of the Great Plains. It has a vital bearing on any museum located in this region. Therefore, it is difficult to make special cultural adaptations for the Plains.

Dr. Kraenzel states: "It is clear that there are decided barriers to the proper adaptation of cultural institutions to Plains conditions, since there are not enough social organizations to bring about such adaptations, or to disseminate them once they have been invented. The task now is to provide the media and the organizations to encourage adaptation within the region; to disseminate these facts; and to assist in putting them into effective operation by inculcating them into the true, deep values of the region.

"The best device to accomplish this is regionalism. Regionalism does not mean sectionalism and provincialism. It does not mean isolation, stubbornness, lack of cooperation, and an attempt to separate from the whole. Rather, regionalism means an understanding of the specific problems of the region and the relationship of these problems to all other regions; thus a full development of the region by cooperation with all other regions. It emphasizes balanced development among all the interdependent parts of the whole; not exploitation of one by the other. It emphasizes communication and understanding among these interdependent parts and calls for democratic participation by all concerned.

"Regionalism also provides an organization for marshaling the necessary resources, institutions and leadership to do the job that needs doing. It does not de-emphasize state boundaries. Regionalism can assist such independent cultural services (as a museum) in working out inter-relationships by which wasted, unused, and exploited resources may be constructively used." Kraenzel says.

* * *

There is much history and early precedent for a regional approach to the Great Plains. There is a pressing need for more and better library, art, literary, music, museum and educational facilities in the towns and villages of the region. The Great Plains, as a unique region requiring special adaptations in order to become a full partner with other areas, in the past half decade has made considerable progress towards healthful adaptations. But a large task

lies ahead. To accomplish this, it is necessary to have a myriad of centers for the identification, adaptation, and diffusion of cultural traits.

There is a need for a bold new device to effect regionalism for the Plains. Museums can certainly fuse and stimulate the task. Other cultural responsibilities could be pro-rated among the universities and colleges. There must be a sensible division of labor, so that one institution might more fully explore and emphasize the study of history; another of literature, another of archeology, art and so on. The field is almost limitless. But to understand this uncommon region one must approach the past. Here briefly, is a capsule summation of Great Plains History.

* * *

To those of us in the museum business, the Great Plains region represents the most exciting challenge existing in the United States today. The history, art and archeology – using the broadest possible connotations of those vast fields – is not only romantic and colorful, but it is astoundingly vast and stimulating. Despite all combined museum efforts to date, the prodigious surface, alone, has barely been scratched. Let us briefly examine a segment of the history – just that which has colored the region's thinking and affected most directly its mores – to see what a bull we have by the tail.

I am using here an excellent historical synthesis by Dr. Robert G. Athearn, a former Montanan, now widely known for his historical activities at the University of Colorado, which incorporates most of this meat. It appeared in The Great Plains Issue of *Montana, the magazine of western history,* Winter, 1958. Much of this is lifted intact. Dr. Athearn states:

> What has been known variously as the "Desert Theory" or the "Desert Myth," depending upon who was using it, gained its first national notice from the report of Lieutenant Zebulon Montgomery Pike who trudged westward in the latter part of 1806 toward the peak that bears his name. After crossing the high plains, and fighting the blowing, stinging blasts of sand for endless barren miles, he predicted that the region might "become in time as celebrated as the sandy deserts of Africa." A few years later, in 1820, Major Stephen Long covered much of the same country on the way to a mountain of his own. Both he and Dr. Edwin James, a botanist in the party, agreed that the country was unfit for cultivation and not suited for an agricultural people. It was a land of "hopeless and irreclaimable sterility," in the words of the botanist. James was even puzzled at the presence of animals in such a place. He wondered what induced them to stay and concluded that man, a higher type of animal, would never fall into the same error. Easterners, some of whom were already worried about the loss of their population in the great westward movement, applauded the sentiment.
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> Following the Long expedition the government suspended its official explorations of the plains until the 1840s when some of the mountain

men, Kit Carson among them, escorted Major John Fremont on enough guided tours to win for him the name "Pathfinder." Meanwhile a number of privately supported investigators took a look and made judgments of their own. In 1832, John B. Wyeth crossed the plains en route to Oregon (and anticipated Professor Webb) when he made the statement that this strip of land lacked two all-important elements: wood and water. Rivers like the Platte, shallow, unnavigable and generally miserable, moved toward the sea, as Wyeth put it, without "enlivening or fructifying this desert."

There were those who disagreed with this early assessment, just as latter day Westerners complained about the harshness of Webb's strong article in Harper's, of May, 1957. Jacob Fowler crossed present Kansas only a year after Long's travels. He saw it as a rolling land, "no Wheare two steep for the Waggon or the plow," in which rivers like the Arkansas were flanked by trees useful for building or fencing. John D. Hunter, a man who had lived among the Plains Indians for some time, agreed, and predicted that one day the country between the Missouri and the Rockies would support fifty million people. Still another, Reverend Isaac McCoy, came back from explorations in Kansas with a report that stories of timber scarcity were exaggerated. Like the others, he admitted that parts of the area were not suitable for an agricultural population under existing conditions but he too thought that the river valleys held a promise. A fellow cleric, Reverend Samuel Parker, foresaw settlement spreading out from the rivers and the emergence of a solid population. Both he, and Frederick A. Wislizenus, a German doctor who crossed the plains in 1839, discounted the disadvantages and treelessness. Why not plant them, they asked. A hundred years later the New Deal would try, with some success, to follow the suggestion. The lack of timber and the apparent infertility of the soil would not, said the Doctor, effectively bar western settlement. Accurately he predicted that current tales of western life would, in a hundred years, sound like fairy stories. None of these men were willing to make a sweeping, all-inclusive condemnation of the high plains as an irreclaimable part of America.

But nothing is so hard to lose as a bad reputation. Despite such optimistic opinions as those just described, the term "desert" was unshakeably fastened upon the western plains country. Jefferson had wondered about the worth of the southern plains. Pike, Long and James offered their respective official opinions and the more settled portions of America accepted the assessment. The Woodbridge and Willard geography of 1824 set the notion before the American schoolboy, as did Carey and Lee's Atlas of 1827. Michell, in his "Accompaniment to Reference and Distance Map" of 1835 compared our desert to the Sahara and the thesis of the region's sterility appeared in the Bradford Atlas of 1838 and Washington Irving's Astoria. Greenhowe's History of Oregon in 1845 carried forward the theme, unblemished and untarnished.

The decade of the 1850's saw nothing official to dispel the desert idea. Army officers, like Captain Randolph B. Marcy and Lieutenant Gouverneur K. Warren, repeated the earlier sentiments of Pike and Long. Marcy called the high plains a barren and desolate waste where "but few small streams greet the eye of the traveler, and these are soon swallowed up by the thirsty sands over which they flow." Warren looked at Dakota country and remarked that "Agricultural settlements have not nearly reached their western limits on our great plains; the tracts beyond must ever be occupied by a pastoral people, whether civilized or savage."

John Bradbury, a naturalist, had preceded Warren by more than forty years in the Dakota country, and had, in 1811, discounted the claim that the

land was worthless for agricultural purposes. He recognized the mental block of the American farmers who thought they to have an adequate timber supply for fencing and fuel before moving farther west, and he tried to argue that their fears were exaggerated. It did him no good. Farmers of his day, or even those of the 1850's, were not prepared to take the risk while land was still available in more humid areas. It was bad enough to look westward to a country devoid of the familiar resources of timber and adequate rainfall, but when it lacked a system of navigable rivers or railways with which to transport cash crops, the question of the land's fertility was purely academic.

By the mid-Nineteenth century the high plains and Rockies were under an increased white scrutiny, despite desert talk. The legion of '49ers who made their way clear to the coast found that the land enroute was at least passable, something that many of them had wondered about. A decade later the Pikes Peak rush brought a new legion of gold-seekers into the Rockies and these people, too, found the plains perhaps climatically unfriendly, but not always dangerous. Before the Civil War even the agricultural prospectors had crept up the river valleys toward the 100th meridian, taking up farms, and enjoying some success. There began to emerge a feeling of cautious optimism.

With the surrender at Appomattox the nation again turned its energies to internal development and resumed its westward march. Increased activity in the land beyond the Missouri did not mean that the desert theory was discarded. It was talked of a good deal, for more than a decade after the war, but that did little to stem the flood tide of emigration. Professional frontiersmen long had recognized the hazards of western life, but being men of unfailing optimism they had for generations moved onward, searching out the better and more productive lands. Now, after 1865, they were unwilling to accept the generalization that all the West was sterile, and a host of amateur pioneers were ready to follow them across the Missouri.

Post-Civil War Americans were not afraid that their nation lacked agricultural capabilities. Millions of acres of farm land in the East, the Ohio and Mississippi Valleys, and the South furnished all the foodstuffs that were required. Nor were they concerned about the West's capabilities as the country's granary; instead, they regarded it as a potential mining and grazing area whose mountains and plains might well furnish things unavailable elsewhere. Rather than worrying about what the West could not produce they concerned themselves with what it would yield. If some of the land lacked promise, the remnants were sufficiently large to satisfy national needs for generations to come. It was with this attitude of inquiry that the American people renewed the task of settling up the remainder of their public domain.

Foremost among the inspectors of the undeveloped region were the Army officers. From the time of the Louisiana Purchase, on through the years of later territorial acquisitions, newly acquired holdings were constantly under the scrutiny of these men. They formed the advance guard, the "picket line of civilization," as their organization was called. Not only did the military stand between the hostile Indians and the oncoming settler, but that branch of the government continuously fed back information to the East about the nature of more remote and unsettled parts. Reports of Army officers comprised a kind of bridge between the earlier stories of absolute sterility and the highly colored and exaggerated descriptions later published by the population-hungry western railroads. Military men were traditionally cautious about "puffing" the new country, but at the same time they saw possibilities in certain sections of it and expressed enthusiasm in their writings.

At the close of the Civil War General William Tecumseh Sherman, known to millions of his countrymen as the "hero of Atlanta," took command of the Military Division of the Missouri. It was an empire in itself, stretching westward from the Mississippi River, beyond the Missouri, and across the Rocky Mountains, and bounded on the north and south by Canada and Mexico. The acceptance of this assignment was not done in the usual manner of the good soldier taking what was given him. Sherman requested the duty. Second only to General Grant in rank and fame, he had his choice, and unhesitatingly he selected the West as his place of work. Even since his early days in California, during the Mexican War, Sherman had displayed an interest in America's undeveloped regions and it was here that he wanted to spend his remaining Army life.

The new western commander had never seen most of the country beyond the Missouri, but he had some opinions about it gained from the reports of his subordinates and from the accounts of civilian travelers who had been there. General John Pope, Sherman's predecessor in the West, reported in 1866 that the land lying between the 99th meridian and the Rockies was certainly the Great American Desert. He called it a region of "high, arid plains, without timber," lying beyond the reach of agriculture and he concluded that it must always remain an uninhabited desert. General Randolph B. Marcy, who once again was inspecting those parts, said the mid-continental section was "destined in the future, as in the past, to be the abode of wandering savages." A new book, by Samuel Bowles of the Springfield, Massachusetts' Republican, was just out. It described the editor's recent trip across the plains, a place he called the "Great Central Desert of the Continent, stretching from the far distant north to the Gulf of Mexico, and separating by four hundred miles of almost uninhabitable space the agriculturally rich prairies of the Mississippi Valley, from the minerally rich slopes and valleys of the Rocky Mountains." While he admitted that it was "not a desert, as such is commonly interpreted—not worthless, by any means," he was convinced that its primary use would be for grazing. To Bowles, the arid basin west of Salt Lake City did not promise even that. It was, he said, "a region whose uses are unimaginable, unless to hold the rest of the globe together, or to teach patience to travelers."

General Sherman was anxious to visit the places of which he had read and, using information gained, he described to General Rawlins, of Grant's staff, the nature of his new command. Quite within the desert tradition he wrote, "In general terms the settlements of Kansas, Dacotah and Iowa have nearly or quite reached the Western limit of land fit for cultivation, parallel 99° of West Longitude. Then begins the Great Plains 600 miles wide, fit only for Nomadic tribes of Indians, Tartars, or Buffaloes, then the Mountain regions useful chiefly for precious metals." He enlarged upon the notion in a letter to the St. Louis Republican, published March 25. "What are the uses to which the vast and desert regions of our country between the 100th parallel and the Pacific basin are to be applied?" he asked. "We know they are useless for agriculture such as prevails in the fertile lands of the Mississippi basin, and that, though gold and silver may be found in certain mountain ranges, yet the great mass of the country seems utterly devoid of value in the future unless other articles useful to our people can be produced."

During the summer of 1866 Sherman toured the high plains. A first-hand view of the country along the old California Trail, up the Platte Valley, did not change his opinions. He complained about the long, dusty road and the "everlasting line of telegraph poles." Nor did the section between Fort Sedgwick, in northeastern Colorado, and Fort Laramie please him. Surely

nothing but irrigation would ever attract the farmer to such a region, and even then, he thought, the government would have to pay people a bounty to live there.

General James F. Rustling, who made an inspection tour for the Quartermaster General's office that same summer, had a more favorable opinion of the Platte Valley. As he crossed western Nebraska he noted, "Much of this region is marked on the old maps as the 'great American Desert;' but from all we saw and heard I doubt not, as a whole, it will yet become the great stock-raising and dairy region of the Republic . . ." The broad river bottoms appealed to him as land that would "produce grass in goodly quantities all summer, and we saw no reason why they should not also grow most cereals and vegetables."

By the time Sherman reached the base of the Rockies his notion of the region's future began to change. He was very happy that farmers had taken advantage of the water that coursed down from the mountains in a number of streams, and had, during the previous six years, constructed important irrigation systems. Like the journalist, Albert D. Richardson, who had toured the country a year before and had predicted great things for the entire West by means of irrigation, Sherman was impressed by its possibilities. "Now flour, oats, corn and grain & vegetables of all kinds are produced here and hereabouts, equal in quality with any at home and of prices far below what they could be brought out for," he reported to Army headquarters. "The system is only begun for in each of the Creeks I have seen not one 50th of the water has been diverted from its channels and when all is, I would not be surprised if these mountain streams would irrigate and make most fruitful one-fourth of all the land from the base of the mountains out for fifty miles." He was still convinced that nothing could be raised without irrigation but with such a water supply available he thought the method superior to that of rainfall. "Almost all of India, Egypt, South of Spain, Mexico, and Chile are cultivated in this way," he wrote to General Rawlins, "and they have been at various epochs of the world history the granaries of the world. In Utah the system of irrigation has in a very few years converted an absolute desert into fruitful fields and gardens. The Plains lying along the foot of the Rocky Mountains present a vast field for the same species of culture and I shall hope that the small beginning that I have seen will be the initiation of a system of agriculture that will prove of inestimable wealth to our people . . ." Sherman had found his first oasis in the Desert.

At Denver, Sherman was joined by General Rusling and together they inspected the southern part of Colorado. Along the Huerfano they came to the ranch of a former Army man named Colonel Craig. Sherman was delighted at Craig's dam, built to divert water "right & left into canals which supply the intricate system of smaller ditches . . . by which he can irrigate all the bottom land for miles below him. He has this year 2300 acres in a good state of cultivation, mostly in corn which gives him from forty to sixty bushels of corn to the acre. He and his neighbors produce all sorts of vegetables of the best kind, and have demonstrated beyond all question that all the valleys of the Upper Arkansas can be made by irrigation to produce all that is needed by man or beast." The officer concluded that "I do think that the efforts of these people to transform the desert into productive farms is worthy of the encouragement of the General Government and I will treat of the subject again at length."

By the time Sherman made his report of November 8, 1866, after having actually visited the West, his earlier harsh opinion as to the region's

value was further modified. That spring he had called the plains fit only for nomadic tribes of Indians, Tartars or buffaloes; now he said they were "a vast prairie, with good grasses, but generally devoid of trees or minerals, are subject to droughts, and are not inviting to settlers." The mountain region he described as not only rich in minerals but possessed of "forests of timber and numerous valleys susceptible of high cultivation." He was convinced that the Rockies "present a most interesting feature in our future development as a nation."

Of New Mexico, he could not say as much. While he had not yet seen it, reports about the place were not favorable. In January 1866 he advised an Army friend that "It is a worthless waste of land, having no connection with the United States, save as they report, by long lines across deserts devoid of life and grass. Its purchase by the United States in the first instance, was a mistake, and now for all time to come it will be a source of expense without contributing one mite to the national wealth or strength . . ." That same month he told Quartermaster General Montgomery Meigs that the only reason the country ever acquired the Southwest was to spend money, and he recommended "if Congress is now tired of the bargain, advise them to sell Texas, New Mexico and Arizona to Maximilian, even if we have to lend the money wherewith to make the purchase." It was, he said, a land that had been settled longer than his native state of Ohio, yet it had progressed but little and was inhabited by a people who were "a poor, miserable set as a whole." To him, it was inconceivable that the better class of white emigrant would ever settle there, except to make a fortune selling supplies to the Army.

In the spring of 1868 Sherman visited the Territory about which he had such a low opinion. During the latter part of May he and Samuel Tappan, a member of an Indian Commission, talked with Navajo tribesmen at Fort Sumner, New Mexico. When it was proposed that the Indians be moved out of the eastern part of the territory to their old homes in its northwestern section, there was objection by the white residents. Their only complaint, said the General, whose temper was quick to rise, was that they could no longer make money selling supplies to the Army and the Indian Bureau if the Indians were moved out. "Take away the troops from this country and it will be poor indeed," he wrote to General Grant. "The only profitable mines in New Mexico have their base in the U.S. Treasury in Washington."

From Fort Union, New Mexico, the General wrote to his brother John, a United States Senator, offering his assessment of the region he was visiting. "This whole country is a desert, with little narrow patches of wheat, corn, beans & cultivated as land was cultivated in Spain five hundred years ago. One county of Ohio will maintain a larger population than all New Mexico. Nor do I see any hope in the future." His concern of maintenance costs was again reflected when he remarked, "This Territory has cost over a hundred millions of dollars already, and will always cost from three to five millions a year, and never by any process can it ever contribute one cent to the national income . . . Even now we are spending annually more than all the country with its houses, land, cattle, sheep and people would sell for, but I suppose it cannot be helped." Perplexed by the questionable future of the Territory, so arid, remote and different from the more settled parts of the nation, Sherman told his brother John he was reminded of the story a friend used to tell about a "Hypochondriac Doctor, who was delivered of the Woodchuck baby. 'Well you are a d——d ugly looking thing, but as you are mine I suppose I must support you.' So of New Mexico. It is a d——d ugly elephant on our hands, but as we were fools enough to buy it of Mexico we must feed and maintain its mongrel population forever."

General Sherman was not alone in his reluctance to abandon the desert theory during the early post-Civil War years. In 1870 an Illinois newspaper warned its readers against taking up homes in the new Greeley colony in Colorado because it was located on "a barren, sandy plain, part and parcel of the Great American desert . . .," and only crops it was apt to yield would be prickly pears and prairie dogs' holes. Three years later a correspondent for the New York Times advised Easterners that the 98th meridian marked a definite boundary in the physical geography of the nation, on one side of which was a land of adequate moisture, and on the other a country "without sufficient rain-fall for the cultivation of the soil." Considering the same area later discussed by Professor Webb, the reporter asked, "Here are one million square miles of barren country, and the question is, What shall we do with it?"

That same year, 1873, J. H. Beadle, western correspondent for the Cincinnati Commercial, published his book *The Undeveloped West.* No matter how the traveler went to the Pacific Coast, he said, there was no alternative but to cross a desert from five hundred to a thousand miles in width. He judged the region eight hundred miles west of the 100th meridian to be "The 'American Desert': a region of varying mountain, desert and rock; of prevailing drought or complete sterility, broken rarely by fertile valleys; of dead volcanoes and sandy wastes; of excessive chemicals, dust, gravel and other inorganic matter." It was believed that the very elevation of the Great Plains would prevent successful agriculture. "Those who talked so glibly of the reclamation of waste lands of the West," he warned, "must wait until nature flattens out the country, and brings it down into the region of warmer air, and more abundant moisture."

To even a western promoter, deeply interested in the future of the land, there was doubt about agricultural future of the "old desert region." General William Jackson Palmer, President of the new Denver and Rio Grande Railway told stockholders, in his first annual report (1873) that the north-south line was protected from competition by a desolate region to the East of the Rockies. The route of his road, he said, was "separated from the boundary line of arable culture on the eastward in Nebraska, Kansas, and the Indian Territory and Texas, by a width of over 400 miles of arid plains, unfit for settlement except in occasional valleys, and only capable as yet of supporting a population of nomadic stock-raisers."

As the decade of the Seventies drew to a close, Easterners were still highly skeptical about the future of the farmer beyond the hundredth meridian. An Ohio editor, bound for the Colorado Rockies in 1879, wrote that before one reached the cooler and more verdant regions, "a glaring sunshine ushers you upon the vast plains, the Great American Desert." "The Plains!" he exclaimed. "A Dead Sea transfixed in solution by a fierce sun, and baked into sterility." Another writer derided land company agents for outrageously misleading prospective settlers. "These enterprising advocates sometimes indulge in flights of rhetoric that scorn the trammels of grammar and dictionary," he wrote. "Witness the following impassioned utterances concerning the lands of a certain Western railroad: 'They comprise a section of country who (se) possibilities are simply infinitesimal and whose development will be revealed in glorious realization through the horoscope of the near future'." The author decided that the promoters had picked the right word to describe the prospect of the plains; to him infinitesimal meant small or very minute. "What more fitting word could the imagination wherewith to crown the possibilites of alkali wastes and barren sun-scorched plains?" he asked. A railroad enthusiast, describing the contributions of the great Pacific Road, defended the region with a widely-used counter-argument. He admitted that it was "once

supposed to be worthless for agriculture," and conceded that much of it could not be irrigated, but, he said, it was "found to be admirably adapted to grazing, and is being rapidly occupied for this purpose . . ." Nor should Americans forget, he pointed out, that nothing had contributed more to the financial or monetary independence of the nation than the West's enormous wealth of precious metals.

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By the Twentieth Century, there was little reference to the Great American Desert, as such. The word was not excised from the language—even the Westerner's— but it was no longer used to designate a large specific area of the nation. What happened to the desert was its gradual diminution and finally, fragmentation. As late as 1917, when George Wharton James wrote his *Reclaiming the Arid West*, he said that America still had "400,000,000 acres of deserts, mostly public domains." By then the desert was largely a point of view: it lay somewhere other than the place where Westerners who talked about it lived. It was like the frontier itself; there was no longer a recognized continuous line of aridity running south from the Dakotas and Montana to Texas. Instead, there were selected deserts, and people who lived on the plains said they were in Nevada, Arizona, or Utah.

During the last quarter of the Nineteenth Century the Great Desert that had appeared so prominently upon maps of the West was talked out of existence, or at least into temporary retirement. To the very early travelers the Trans-Missouri country had looked vast and forbidding. But as men worked their way into it, cautiously, and for a long time slowly, the boundaries of no man's land shrank continuously, until by the Seventies the retreat seemed obvious to a few. Ferdinand Hayden, the government explorer, talked about it during those years, and admitted that the "desert region" yearly was becoming narrower and narrower. He thought that in time it would cease to exist in the imagination.

Even during the Forties and Fifties, when the belief in a desert was at its height, west-bound emigrants frequently were surprised that their crossing of it was accomplished with less difficulty than they had expected. By the end of the Sixties a railroad spanned the West and in a matter of months a once remote place like Denver was served by several railroads. With the coming of the transcontinental lines settlers moved more boldly into the forbidden land and even to its remote and arid sections, invading the very heart of the old desert.

By the end of the Seventies General Sherman admitted that in no fifty-year period in any other region of the earth had there ever been so radical a change as upon the plains during the preceding decade. "Simply prodigious," he wrote. General Phil Sherman was equally impressed. He reported that "emigrants are so rapidly taking up land everywhere in the west, and towns and hamlets are so quickly springing up that almost constant additions have to be made to our military maps to enable us to keep posted regarding the spread of our frontiers." With the great land rush of the Seventies and Eighties the desert was cut to bits, leaving only the most forbidding remnants with the arid title that once described much of the Louisiana Purchase.

The instrument that killed, or at least temporarily anesthetized the desert theory, was the railroad. It was not only Army officers who anticipated the solution of western problems through the use of the new roads; other governmental officials saw their value, too. In 1869, the year the Union Pacific was completed, the Secretary of the Interior admitted that already

the nature of the white advance was changed radically because of the new means of transportation. "Instead of a slowly advancing tide of migration, making its gradual inroads upon the circumference of the great interior wilderness, the very center of the desert has been pierced," he wrote. "Every station upon the railway has become a nucleus for a civilized settlement, and a base from which lines of exploration for both mineral and agricultural wealth are pushed in every direction."

The spread of population over the desert did not alone result from the mere appearance of the railroads. To familiarize Americans, and emigrants from all over the world with the West, thousands upon thousands of dollars were poured into one of the largest promotional campaigns the nation had yet witnessed. As early as 1859 a young Harvard graduate, recently put in charge of the land department of the Burlington and Missouri Railroad, saw the point when he remarked, that "he who buildeth a railroad west of the Mississippi must also find a population and build up business." The roads had more than rails and rights of way, in the new country. They were, in fact, rivals of the government itself in the matter of land distribution. By 1880 the various companies were granted more than 155 million acres of land, while individual homesteaders claimed but 55 million from the government. These corporations relieved the federal land office of the necessity of advertising western opportunities through their own efforts to attract settlers. Thousands of prospective home-makers first heard about the high plains from one of the millions of leaflets distributed both here and abroad by the railroads. Northern European countries, in particular, were flooded by the literature.

Railroad companies spared nothing in their attempts to attract prospective users. Samples of crops, sworn testimonials, pictorial evidence, all made their way to readers in the eastern United States and Europe. Modern patent medicine and cigarette companies, and their testimonials purportedly supported by reputable doctors, might well have learned such techniques from the flood of "scientific" tracts swearing to the richness of western lands. Jim Hill, of the Great Northern, sought out those "scientists" who agreed with him and then spread the word far and wide that such places as the Dakotas and Montana were a land of milk and honey. The Union Pacific tried to erase the desert theory by converting the West into a climatic paradise with the pen. One of that railroad's writers called the Platte Valley of Nebraska a "flowery meadow of great fertility clothed in nutritious grasses, and watered by numerous streams." Newspapers, chambers of commerce, and all local supporters, readily fell in with the railroads in their praise of the prairie soil and its potentialities. So did steamship companies, anxious to pack their ships' holds as tight as sardine cans with the oppressed of Europe—for a price.

From all over Europe and from the more settled portions of the United States came farmers, each hopeful that here at last was the golden opportunity. Jim Hill's Great Northern offered emigrant fares as low as $12.50 from St. Paul to points in the sometimes parched reaches of eastern Montana. To further encourage the newcomers car load freight rates on farm machinery, household furniture, domestic animals and other necessities were set as low as a single passenger fare. In other words, a farmer could bring his family and all his worldly belongings west for almost nothing. It is small wonder that thousands regarded it a bargain of a lifetime and tore themselves loose from their roots to partake of the new life where once, in the dim past, there had been talk of a desert. Propaganda pamphlets, testimonials, crop samples, and the irrepressible urge of the American people to go West convinced agrarians that the earlier talk of sterile lands beyond the hundredth meridian fell into the category of groundless rumor.

General Sherman, now nearing retirement, was puzzled at his countrymen. "When I think of the naked plains of Nebraska, Kansas & Dakota, westward to which go annually a half million of Emigrants, I do not think I was wrong in advising some to go to North Georgia & Alabama, where you have at least water and firewood," he rationalized. "But each emigrant must choose for himself." How could these people, he asked, go out onto the plains "where water is scarce where fuel is dear if not absolutely beyond price—and where the soil is often barren for want of the necessary rain fall. Yet the Alleghany Range with innumerable valleys abounding in rushing streams, boundless forests of timber and good soil remain in a state of nature." It was more than the old gentleman could understand. He had seen the desert. While he was ready to soften his earlier opinion about its uselessness he could not comprehend the magnitude of the rush into its most arid depths.

As Sherman, and others, stood by and observed the persistence of the westward movement in puzzlement, settlers continued their assault upon unclaimed lands. Even nature's most violent threats could not stave off their invasion, once it gained momentum. A pioneer woman, who lived through years of adversity, stubbornly clinging to her western toe-hold, later recalled, "Our attempt to crop and garden was washed out by the flood. The drought followed, and after the drought came the grasshoppers . . ." The Seventies brought not only drought and locusts, but a national financial panic that meant disaster and a temporary depopulation of the plains. "The country was a desolute ruin for miles and miles," wrote an early resident. "Not a farmer was left, and a few settlers who remained engaged in the stock business, continually singing the song, "This is not a farming country, it is only good for cattle'." Then the retreat slowed and gradually the tide of western settlement rose again, sending new legions of farmers across the plains.

As the decade of the Eighties commenced the former American Desert region experienced a real settlement boom. Within ten years Nebraska could boast of more than a million residents, while Kansas could top that figure by a half million. The Eighties were also boom years for Dakota Territory. As early as 1881 the land commissioner for the Northern Pacific Railroad reported, "In this region where five years ago there was scarcely a white man, there is now a thrifty population of nearly 35,000 people, hailing from all parts of the world. There were 273,000 acres of land cultivated on the line of the Northern Pacific Railway last year. Barnes County, which is only four years old, has a population of three thousand, with seven hundred farms." By the following year, federal government authorities estimated that in the two year period since the census of 1880 Dakota had grown by at least seventy-five thousand people.

No one seemed to have read a recent Department of Interior report by Major J. W. Powell, published in 1879 under the title *Lands of the Arid Region*. In it he warned that the hundredth meridian was the westward limit of reasonably safe agricultural endeavor. Such pessimism was howled down by the pamphleteers, who charged the major with a conspiracy against the West. If the settlers gave the controversy any notice, it did not affect the magnetic pull of the frontier upon them. No one could keep them from reading what they wanted to believe and their faith was still in the Golden West.

With each succeeding wave of emigrants the railroads stepped up the propaganda attack. They offered land at attractively low rates and displayed willingness to extend credit that proved overpoweringly attractive. The Burlington and the Santa Fe lines provided temporary barracks for the newcomers or shunted box cars onto sidings to house the strangers until they

could build homes. Such temptations brought forth a new kind of frontiersman, one who normally would never have taken the initial step westward. Those who today talk about the intrepid pioneer and his westerning ways, despite Indian dangers and a generally forbidding country, ought to take into account the European farmer who, often knowing little English and less of geography, was plunked down upon a prairie farm by the rising American business man of some 60 or 70 years ago.

The average newcomer was no broadaxe and long-rifle man; he was a transplanted farmer, and he wanted no more than to pursue his profession. It was of such men that the president of the Northern Pacific Railroad complained when they refused to enter Indian country to work on construction gangs. Their forefathers had not moved forward on the cutting edge of American civilization, developing a breed of frontiersmen who expected to cope with daily violence. They had no tradition of suffering at the hands of the natives, and no desire to initiate one. These were people who believed what they had read, weighed the apparent advantages of a new opportunity against the disadvantages of their present condition, and signed up for a trip to the promised land.

As the Nineteenth century closed, the victory of the sod-busters over the desert seemed virtually complete. In a single generation they flooded across the high plains and into mountain recesses, wiping out America's last frontier. Their coming heralded the emergence of modern America, for they brought with them a new way of life. Before the arrival of the farmers the plains' West retained its frontier characteristics, and if the homesteaders had moved into a land similar in humidity and transportation facilities to that farther east, the change might not have been so obvious. But the agricultural pioneers of the plains lived in a new type economy. Theirs was a cash crop, made possible by the railroads, and wherever the rails went, so did the farmers. Well connected with eastern markets, the homesteaders gave up the subsistence agriculture followed by their forebearers. Railroads, rural free delivery, and mail order houses permitted them to live like, and look like, Americans in any other part of the land.

The transformation of the great plains by this polyglot army of plowmen appeared to be a triumph for America's favorite individual, the "little man." By the thousands these people swarmed westward, shoving aside the cattlemen, staking out claims and fencing off the land. Like the locusts they had to combat, the homesteaders spread over the countryside, cutting checker-board squares from the public domain, infiltrating even the most unlikely farming regions. Reminiscent of the early goldrush days, they tore up the sod in frantic haste, mining the soil for the golden color of wheat, and with absolute disregard of warning signals that predicted failure.

When the sod-buster legion had made its deepest infiltration, and already was chanting a song of triumph, there came the awful realization that perhaps this was no land of easy conquest but instead, a gigantic cul de sac, a trap from which there might be no escape. While freight and interest rates soared, the price structure sagged. Bonanza years, followed by desolate, parched years, caused markets to fluctuate wildly. When "the desert" struck back at the invaders and sustained viciousness, using all its climatic weapons, eastern creditors shook their heads in sadness over the plight of their western brethren, and demanded the money due them. Desperately the farmers looked back over their shoulders, but there was no place to retreat. Nor was there any chance to go farther West; the frontier had closed like a vice.

Slowly a great truth dawned on the prairie folk. Difficulties that once appeared temporary in nature were now revealed to be deep-seated,

permanent agricultural ailments. Cornered, the agrarians turned upon the East, the railroads, the government at Washington, the world itself, and snarled like animals at bay. When the first bitterness subsided, they turned to each other and sought a solution to their dilemma. It was at that moment the great plains truly became a region. Common problems, common hatreds and common hopes drove together a people who felt that they were victims of a giant conspiracy, a hoax, and they resolved to strike back.

The railroads, who were the most obvious and nearest objects of farmer resentment, argued that competition and straitened circumstances had forced them to raise their rates. The large number of road bankruptcies gave support to their claim of financial distress, but the frantic farmers, watching their hard-earned investments slip away, were deaf to any explanations. They looked about them and saw the desert re-appearing. A western newspaperman wrote, in 1898, that "Hundreds of abandoned houses dotted the desert, publishing to all who passed the poverty of the country. Where the buffalo and the Indian had flourished and waxed fat, the white man had starved. One could see from the car window how the home hunter had fretted the earth that had given nothing in return for the costly seed sown, and the lone sod house, silent save for the cry of the west wind that came moaning in through the open window, told its own story. There was a way—there is a way—to make this desert bloom, but the lone settler had not found it out."

Bitterly the lone settler charged the railroad promoter with plotting his doom. Railroad magnets like Jim Hill were now accused of perpetration of fraud, and the reputation clung, long after his death. In 1946 Bruce Nelson, in his *Land of the Dakotahs*, called him the land's worst enemy and changed his title from Empire Builder to Empire Wrecker. "The northern plains and its people," said Nelson, "have suffered more, perhaps, through his misguided efforts than through the work of any other single agency. They are still suffering from them." The specific charge: enticing thousands to an arid land with promises of an agricultural paradise, and of tearing up a sod that ought to have remained for other uses. Joseph Kinsey Howard, Montana's leading defender, wrote that many of his people blamed their condition of ruin on Jim Hill and his flamboyant promises about the delights of homesteading far out beyond the humid regions.

Those who stayed on, during the years when many of their neighbors elected to decamp, charged everyone and everything, except the land itself, with responsibility for their plight. The so-called "Populist Revolt" of the Nineties featured a political attack by agrarian groups who largely asserted that their troubles were man-made. The appearance of better years, and a more favorable price level, went a long way to quiet the dissidents. Then came the wet years of World War I and an abnormally large demand for foodstuffs. The retreat was now reversed, and again the farmers sought out unplowed land to plant, anxious to take advantage of record grain prices. There was little talk of America's wastelands during this episode.

By the end of the 1920's, sagging prices, dry crop years, and international financial unrest brought new difficulties to agricultural plainsmen. As a fresh exodus commenced, the old desert received a new title: the dust bowl. Dramatic attempts on the part of the New Deal only partly alleviated the difficulties. But again the western farmers were bailed out by World War and abnormal rainfall. The decade of the 1940s once more saw "the old American desert region" enjoying years of unprecedented prosperity that continued on after the war. By the Fifties there was heard the familiar complaint about dry years in many sections of the vast Great Plains area, and a mounting concern over the future of water supplies.

During the winter of 1956-57 the fear arose that another dust bowl, reminiscent of the Thirties, was in the making. President Eisenhower demonstrated the concern of his administration when he made a flying trip West to determine, as best he could, the seriousness of the situation. Professor Webb, a long-time student of the region, prepared his article for Harper's, in which he called the country of which he wrote an "abnormal land." Fortune magazine, in its April issue, featured an article entitled "A Strategy for Drought" in which it stated that for five years farmers of the Southern plains had experienced the severest moisture shortage ever known to white residents.

The Fortune article struck a more optimistic note than that of Webb, published a month later. "The current drought dramatizes the progress farmers have made toward mastering the environment of the Plains," wrote the editors. "On this broad belt between the Rockies and the prairies of the Midwest, farmers haven't been able to control their erratic climate, or even to forecast its vagaries, but they do have new tools and techniques for dealing with the climate's consequences. With powerful modern tractors farmers can now dig deep into the moist subsoil and bring up stable clods whenever the surface threatens to blow away. New ways of tilling, contour plowing, and terracing get more moisture into the soil and hold it there." More important the article continued, farmers have recognized the fact that dry years are as normal as wet ones, and they are learning to play percentages, hoarding their resources, money and moisture, to cope with periods of climatic adversity.

Then the rains came. The spring of 1957 set moisture records in many a western community and the residents again talked hopefully of better days. As they watched the earth turn green and reservoir levels rise to new heights they had the feeling that things would be all right after all, and gleefully they twitted the Texas historian for gloomy thoughts about the desert.

At the height of the talk about the relief from water shortages, the Denver Post reported that the small town of Frederick, twenty five miles to the north, had, according to its own newspaper, "already passed away into the land of ghost towns from the lack of the life blood of any community—water. For more than a month the little community had been without a water supply. Ironically, it was not the extended drought that caused the trouble, but a flood of May 9 that roared through Frederick, caving in a coal mine shaft that was the town's sole source of water.

Much of the truth that Walter Prescott Webb now speaks—that hurts so many dedicated westerners so much—springs from the promotional propaganda which literally engulfed the world for almost forty years after 1870. Obviously many westerners, who certainly should know better, were brainwashed during the process—and neither they or their offspring are going to accept the objectivity of the first visitors to the Great Plains, who promulgated "that ridiculous Desert Theory."

While there are those who will fiercely defend the West, and angrily deny that it is or ever has been, a part of the Great American Desert, they are forced to admit that it is indeed a land of violent extremes. It is a place where nature's exaggerations are apparent in distances, altitudes, natural wonders, and climatic eccentricities. Ever since the first white men saw the region they and their descendants have tried to comprehend it and to equate their findings against past experience in other climes. A hundred years after Zebulon Pike they are still having difficulty making the mental adjustment.

As an old timer in Montana once said, "Damn such a country—where it snows on the Fourth of July and dried apples are a luxury.

RESEARCH CENTER: MUSEUM OF THE GREAT PLAINS

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The Great Plains as a socio-economic region is coming of age. Evidence of this emerging maturity is becoming increasingly apparent —a notable example being the very concept of the Museum of the Great Plains and its stated objectives. Finally a synthesis of regional culture will be provided where before there has been a curious and misleading dissection. At long last through the Museum of the Great Plains there will be a vehicle to explain this land, its history and people.

Comprising one-fifth of the land area of the United States, astride ten states, and sustaining today a population upwards of 8,000,000, historically this region which the Museum of the Great Plains seeks to interpret was a land of dread and danger. Because of the chain of savagery poised by the wild tribes which roamed freely over its length and breadth, and the puzzling vastness of grass and limited surface water, the Plains were shunned by the pre-Civil War exodus except as a crossing. Characterized by early explorers as the "Great American Desert," this country between the ninety-eighth meridian and the Rockies, and extending from Canada to northern Mexico has until fairly recent times played a secondary or subsidiary role in national affairs.

The focus in American History traditionally has been east to west. For several generations the line of settlement westward from the Atlantic seaboard was quite regular. Curious, daring frontiersmen carved probing salients here and there in the irresistible westward surge, but these were quickly filled and consolidated by land-hungry settlers. This sequence continued with a steady rhythm into the trans-Mississippi West until American settlements extended to the very rim of the Great Plains. Then the bonanza urge of the California gold fields and the fabulous Oregon Country beckoned siren-like, and the Great Plains were passed over.

The traditional pattern of frontier settlement and con-

solidation was interrupted, and instead of becoming a reservoir of homes, farms, and villages, the Great Plains served for well over two decades in the subsidiary role of a major highway linking east and west, its rolling grasslands cut by the deep-rutted California, Oregon, and Santa Fe trails. This focus has continued into modern times, and the major arteries of communication are still east to west, not north south – the transcontinental railways, U.S. Highways 60, 64, 66, and 80, and the main air lines cut transversely.

In order to really know the Great Plains one must move up and down rather than across, for the stream of Plains' culture has circulated vertically, not laterally. This was the course of the majestic buffalo herds in making their seasonal migrations. The savage Comanche, Kiowa, Cheyenne, and Arapaho, who sustained themselves by preying on these giant beasts, likewise moved vertically rather than laterally. And one of America's first billion dollar enterprises, the range cattle industry, also followed this poleward concourse. Only with this approach can the Great Plains be regarded more as an entity and less of a bridge connecting east and west; and thus will the full regional significance be apparent.

Only belatedly did the settler turn to taming America's last frontier – the Great Plains. This alone assures the region a special place in the history of our nation. And the Museum of the Great Plains is committed to preserve and transmit the heritage which has accrued from transforming this howling wilderness into a vast checkerboard of farms, ranches, and cities. This heritage will be commemorated by the various artifact collections and exhibits housed in the Museum of the Great Plains. One of its most important and useful branches for transmitting this heritage will be the research division. The books, manuscripts, maps, photographs and documents planned for this unit will provide scholar and interested layman alike with the bedrock materials for interpreting and explaining this strange land.

Because anomalies in nature occur so abundantly in the Great Plains region, it would seem not only appropriate but even essential that an effort be made to collect all available materials concerning its natural history. State and federal geological survey reports and papers should be gathered to provide information on regional soils, water, relief, and natural resources. And no collection on Great Plains natural history would be complete without reference materials on its erratic climate and varied *flora* and *fauna*.

Archeological papers and periodicals will be in demand to explain the evidence of pre-history human occupation of the Great Plains. A substantial collection of this category of material not only

can be used to articulate the mute artifact collections already on hand at the museum, but should have the additional influence of stimulating future archeological explorations over the Great Plains.

The Great Plains comprise an extensive laboratory for the study of Indian culture. The Research Center of the Museum of the Great Plains would do well to include in its planning a section devoted to collecting anthropological field notes, folklore materials, recollections from tribal informants, the rudimentary records kept by these indigenous folk, notably calendars and pictographs, and linguistic materials. Within a ten mile radius of the Museum of the Great Plains, there is a significant movement underway among the Kiowa and Comanche aimed at rediscovering their native languages. Other tribes may well take this up and the Museum can play a significant role in this regard by encouraging and extending this attempt by the native peoples to reconstruct their culture through language.

All the fixtures comprising the popular image of the American West are present in Great Plains' history — Indians, buffalo hunters, freighters, cavalrymen, cattlemen, and homesteaders. The activities of these groups comprise a remarkably popular subject in contemporary literature, the cinema, and television. The Museum of the Great Plains plans to perpetuate their exploits with dioramas and special collections of artifacts. But these are mute records — a cavalry scout's accoutrements communicate some of the epic of Great Plains life, but from these artifacts alone only inferences can be made. A new dimension of knowledge is added with, say, this scout's diary, his reports, and correspondence, rudimentary through it might have been.

Representatives from the Research Center of the Museum of the Great Plains should search over the region for the correspondence, diaries, and papers of political, social, educational, and economic leaders who have provided a directive force in Great Plains development. The business papers of representative regional economic enterprises such as oil, cattle, and grain companies should be solicited. The records of frontier banking houses are essential for a complete financial history of a region, and the Great Plains Museum would do well to seek this class of material too. Social history is found in the letters, photographs, and journals of settlers. Some of this type of material already has been gathered in the Research Center, and the Museum officers should ever be alert to new sources of this mother lode of information concerning the pioneer and his times — depicting the resourcefulness and stamina required to survive in this unfriendly land.

Back to Great Plains economic history, this region has for long been an area of economic colonialism. The great cattle corporation and grain combines in the past have been largely financed and directed by absentee overlords, some of them as far away as Scotland and England. An effort should be made to collect materials reflecting the history of these organizations wherever they may be situated.

Agricultural records including co-op papers, irrigation materials, and range management and conservation collections appropriately belong in the Research Center of the Great Plains Museum. And the records of groups giving emphasis to the regionalism of the Great Plains, such as the Great Plains Agricultural Advisory Council should not be overlooked.

There has recently occurred in the communities of the Great Plains a quickening of interest in the fine arts. The Research Center would do well to underscore this significant development by collecting the correspondence, manuscripts, and works of writers, composers, playwrights, and artists devoting themselves to interpreting the Great Plains scene. Such taken-for-granted subjects as architecture should receive notice too, for in the Great Plains region there occurred a blending of Indian, Spanish, and Anglo types added to such *ad hoc* contrivances as the sod-house structure, the latter an irrefutable evidence of natural human adaptation to environmental conditions.

The needs of the researcher are diverse and complex. Besides manuscripts, books, and periodicals, his search for knowledge concerning Great Plains culture can be satisfied with illustrative materials including photographs, drawings, and maps, and narrative material as found in recordings, newspaper files, and microcopy.

Rich research material concerning the Great Plains is scattered in leading libraries throughout the land. While the Research Center, Museum of the Great Plains, should strive for excellence through having available whenever possible the original source material, a realistic consideration would be to recognize the sheer impossibility of this in every regard. Proceeding thus, a sensible way to fill gaps in bedrock research material would be to canvass the libraries of the United States (including the Library of Congress and the National Archives), select those collections germane to the focus of the Great Plains Museum, and arrange for microfilm copies.

Scarce and expensive periodical sets and newspaper files

can be obtained in this fashion too. This calls for microfilm readers and suitable storage for microcopy sets. And modern research is diversifying the use of microfilm: for example, the new commercial Copyflow process prints from microfilm to facsimile size for those library patrons who prefer this to scanning the microfilm reader. Also, through a recent development in fast-copy equipment, by simply pushing a button on the new Therma-fax reader, the researcher can now select certain microfilm frames and in a matter of less than five seconds have in hand a facsimile of the image he viewed on the reader screen.

Scholars and interested laymen will in the years to come visit the Research Center, Museum of the Great Plains, to carry on their special studies. But Research is a cooperative endeavor. And as word spreads across the nation and the world of the resources of this new institution, requests from libraries and researchers will be received for copies of manuscripts, documents, maps, and other research materials. To satisfy these requests, the Research Center would do well to include in the planned photographic lab a microfilm camera and a fast-copy machine similar to the Copease. The latter provides an excellent permanent reproduction at a cost considerably lower than photostats.

After a substantial number of research collections has been established, processed, and identified with a general subject index, the Research Center should publish a descriptive guide to its holdings. This guide in the hands of librarians and researchers over the nation will do much to advertise the resources and enhance the prestige of the Museum of the Great Plains. Also, the Research Center should plan to participate in the Library of Congress Union Manuscript Catalog, for by registering its collections with this vast bibliographical project, the Museum is assured of realizing one of its primary objectives – that of diffusing knowledge concerning the heritage of the Great Plains region.

The text of this magazine is composed on the Linotype in 8 and 10 point Caledonia Roman and Italics. Display lines are set in 10 and 14 point Tempo Bold capitals.

COMPOSED, PRINTED AND BOUND by Semco Color Press, Oklahoma City, Oklahoma.

PAPER, Warren's Dullkote Enamel, manufactured by Warren Paper Company.

COVER, Hammermill Antique, manufactured by the Hammermill Paper Company.

A.S.U. TEMPE, A.

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